



NEW HAMPSHIRE  
DEPARTMENT OF  
**Environmental  
Services**



# Delivery Overfill Prevention

Spruce C. Wheelock  
UST Operator Training Specialist

26<sup>th</sup> National Tanks Conference  
Workshop Monday 09/10/2018



# Content

- **NH findings**
- **Confirm operation**
- **Compromised devices**
- **Problems**
- **Remove to inspect !!!!!**



# ZOOM – ZOOM

## Complete Shutoff





# New



**Should look like  
unlike what I will show**





# OPW Instructions

- **NH requires complete shutoff @ 95%!**
- **Initial shutoff of 95%**
- **Cardboard cut out**

**HOW TO LOCATE THE POSITION OF THE 7150 AT 95% TANK CAPACITY**

Length of the upper tube and the placement of the 7150 valve body determine the shutoff point. Following the structure instructions for the OPW 7150 will provide for initial shutoff at 95%. In all cases, the upper tube length must be a minimum of 6'-1/2" plus the length of the riser pipe. All length measurements are in inches.

**INSTRUCTIONS**

- 1.) Find tank capacity (in gallons) from tank calibration chart provided by tank manufacturer.
- 2.) Calculate 95% of capacity.
- 3.) Locate the 95% volume number on the tank calibration chart.
- 4.) Find the dipstick number (X) which corresponds to the 95% tank volume. And find the dipstick number (Y) which corresponds to the 100% volume.
- 5.) Subtract the dipstick number (X) from the tank diameter (Y) to find the upper tube reference number (Z).  

$$(Y) - (X) = (Z)$$
- 6.) Subtract 2" from (Z) to find the upper tube depth (C).  

$$(Z) - 2" = C$$
- 7.) Is C less than 6'-1/2"?

**NO** Upper tube length is C plus the distance from the top of the Face Seal Adaptor installed on the riser pipe to the inside, top lip of the storage tank (A).

Upper Tube Length = C + (A)

**YES** Upper tube length is 6'-1/2" plus the riser pipe measurement (A).

Upper Tube Length = 6'-1/2" + (A)

**NOTE:** You must find the actual tank capacity number that correlates to the 6'-1/2" + (A) depth for the station records. This number may also be used for the purposes of calibrating an electronic tank level system.

© Registered U.S. Owens Corning Fiberglass Corporation

**Figure 1**

**EXAMPLE**

- 1.) For an Owens-Corning Model G-3 Fiberglass Tank Calibration Chart:  
 Tank Capacity = 10,000 gal., nominal 9,400 gal.  
 NOTE: Use actual capacity only.
- 2.) 95% of actual tank capacity = 0.95 x 9,400 gal = 8,930 gal.
- 3.) The closest number which is less than 8,930 gal. is 8,500 gal. Choosing the closest number less than 95% of actual capacity ensures that the initial shutoff will occur when the tank is no more than 95% full.
- 4.) The calibration chart reading of 8,500 gal. corresponds to a dipstick measurement of 82".
- 5.) Dipstick number (X) = 82"  
 Tank diameter (Y) = 92"  

$$(Y) - (X) = (Z)$$

$$(92" - 82" = 10")$$

$$(Z) = 10"$$
- 6.) 
$$(Z) - 2" = C$$

$$10" - 2" = 8"$$

$$C = 8"$$
- 7.) Is 0" less than 6'-1/2"?

**NO** Measure the distance from the top of the FSA 410 Face Seal Adaptor installed on the riser pipe to the inside, top lip of the storage tank and obtain measurement (A).

Upper tube length = C + (A)

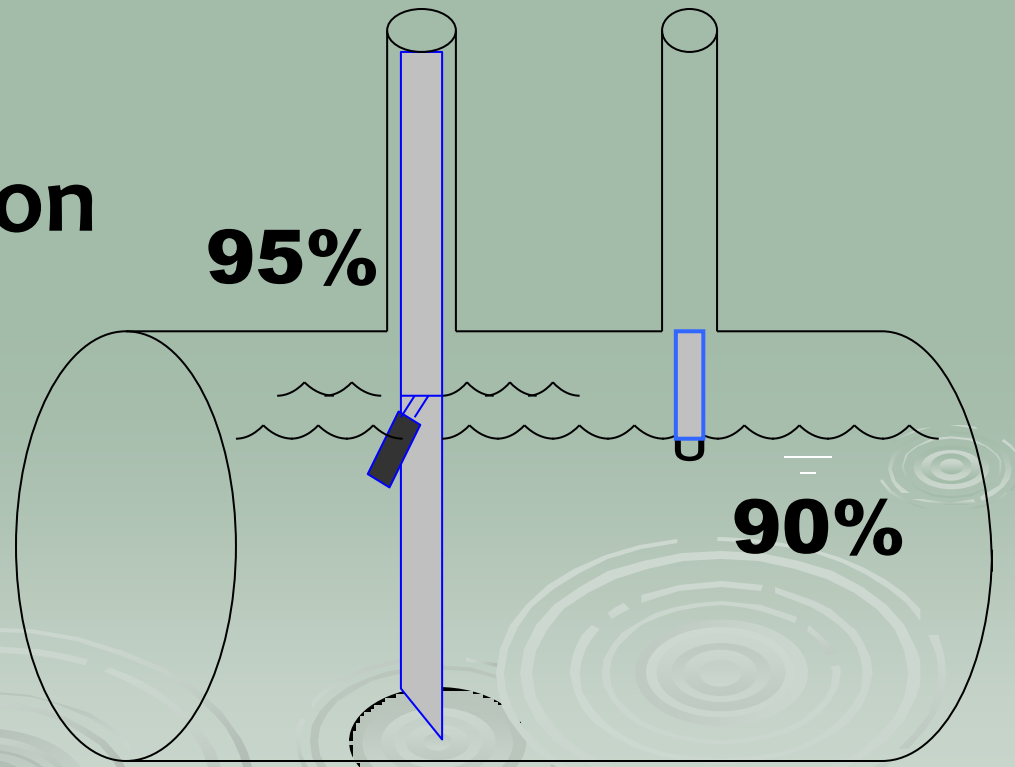
**\*\* OPW complete shutoff #H15524PA \*\***

# Device-Delivery Compatibility

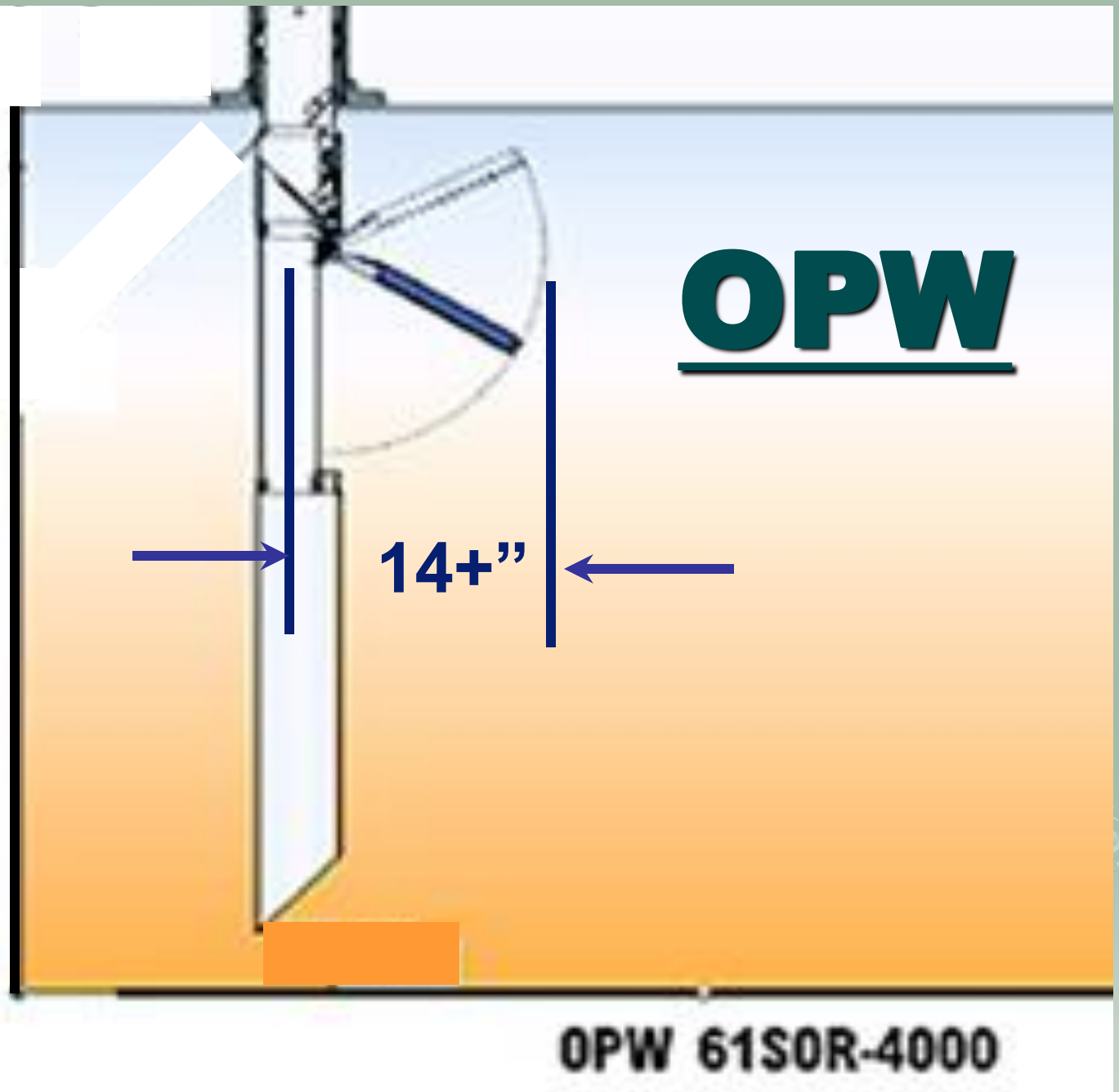
## **NH Inspects for Compatibility!!**

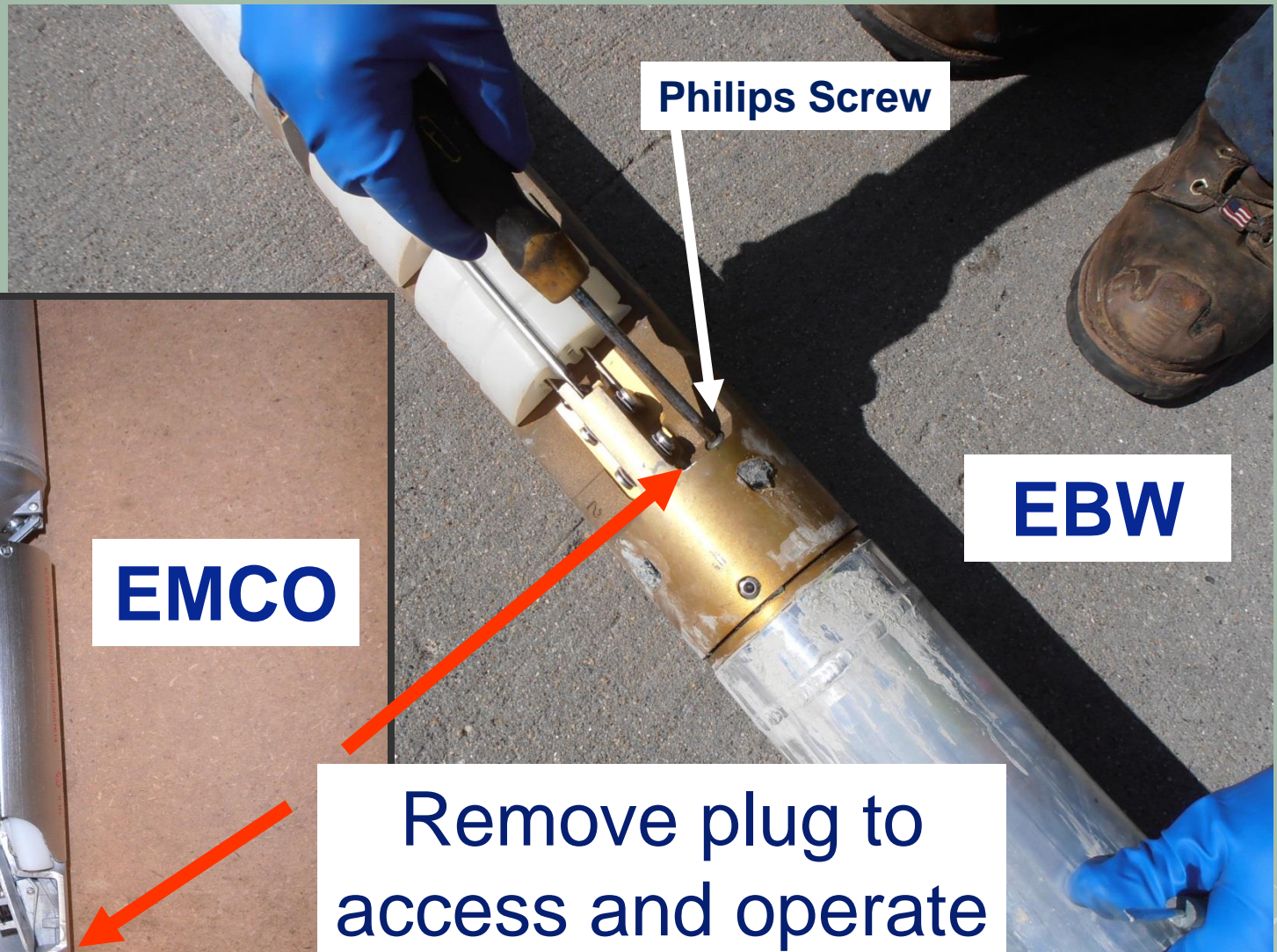
### ➤ Flapper Valve (FV)

- Gravity only  
tight connection
- Can not have  
ball floats!!!!









Philips Screw

EBW

EMCO

Remove plug to  
access and operate  
flapper valve

Allen  
7/64"  
Plug

1/8"  
Pivot





# Older Style Found

- OPW 61TNG-4000
  - Vacuum operated



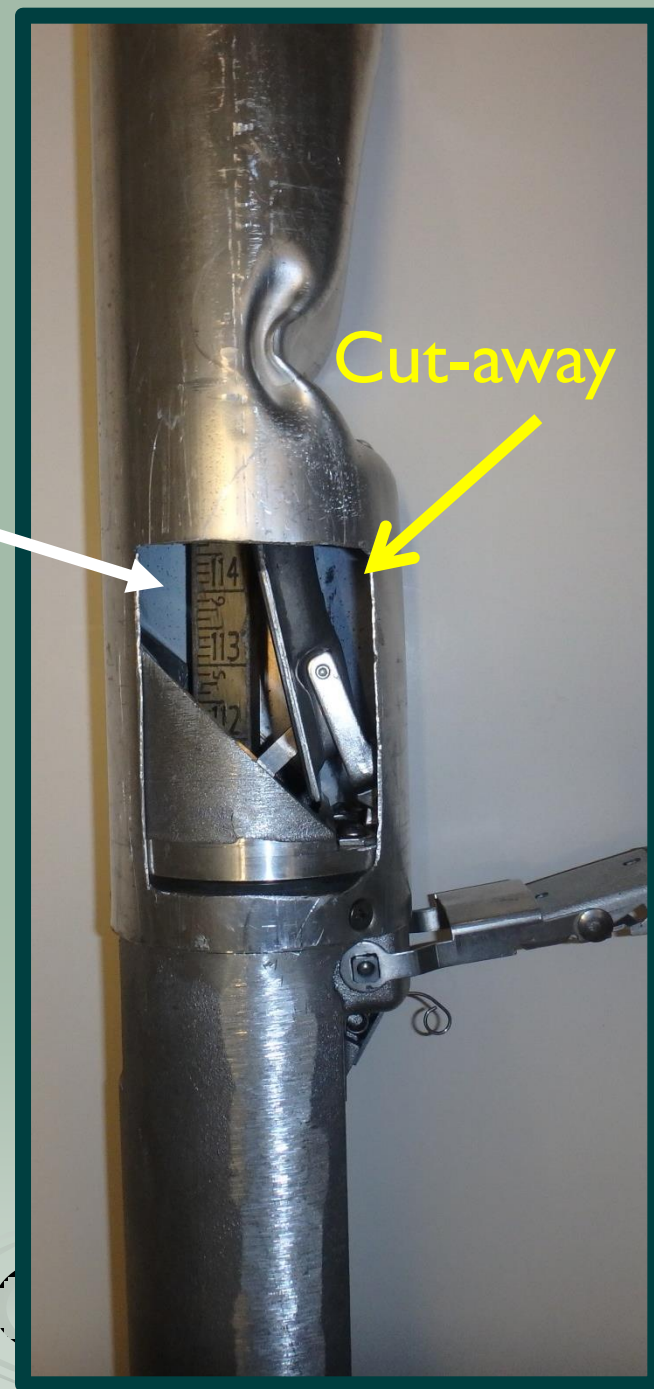
**Failure  
Point**



# What NOT to do



**Delivery with  
flapper valve**





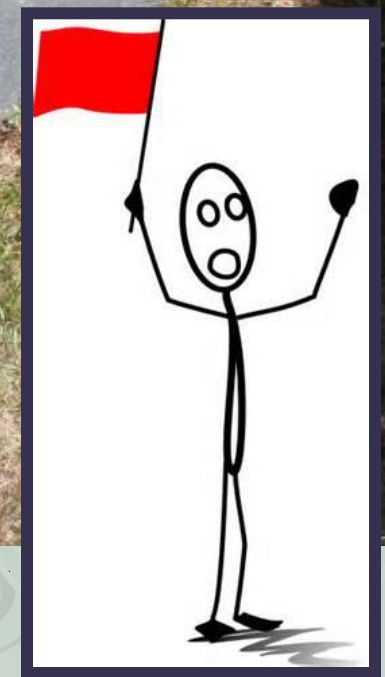
**Inside fill  
drop tube**



**What this?**



**Short or broken inventory sticks**





# Why Remove





## Top Section



# P R O B L E M S



# Hinge problem





# Problems





# ZOOM to Alarms



26<sup>th</sup> National Tanks Conference 2018



# Overfill Alarm=90%

(NH req. Audible/Visual/Signage)



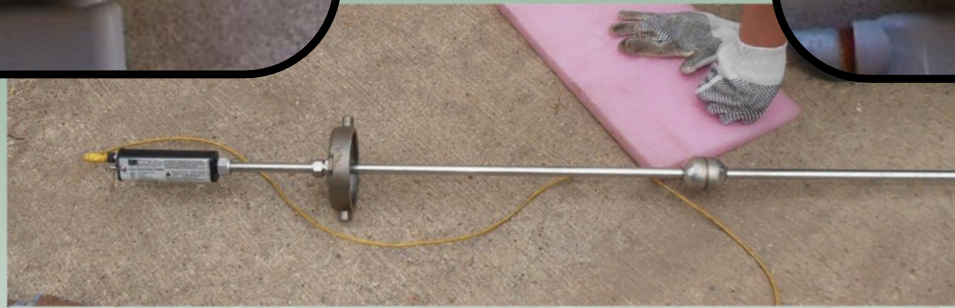
Light

Horn



# Primary high level alarm

**Alarm for each compartment  
if filled at the same time**



**Only one audible/visual unit **field test** the reset**



# Device-Delivery Compatibility

## ➤ Audible/Visual Alarm (AA)



The only device type for both gravity and pressure deliveries!



When Whistler  
Tone Ceases,  
Stop Fuel  
Delivery  
Immediately

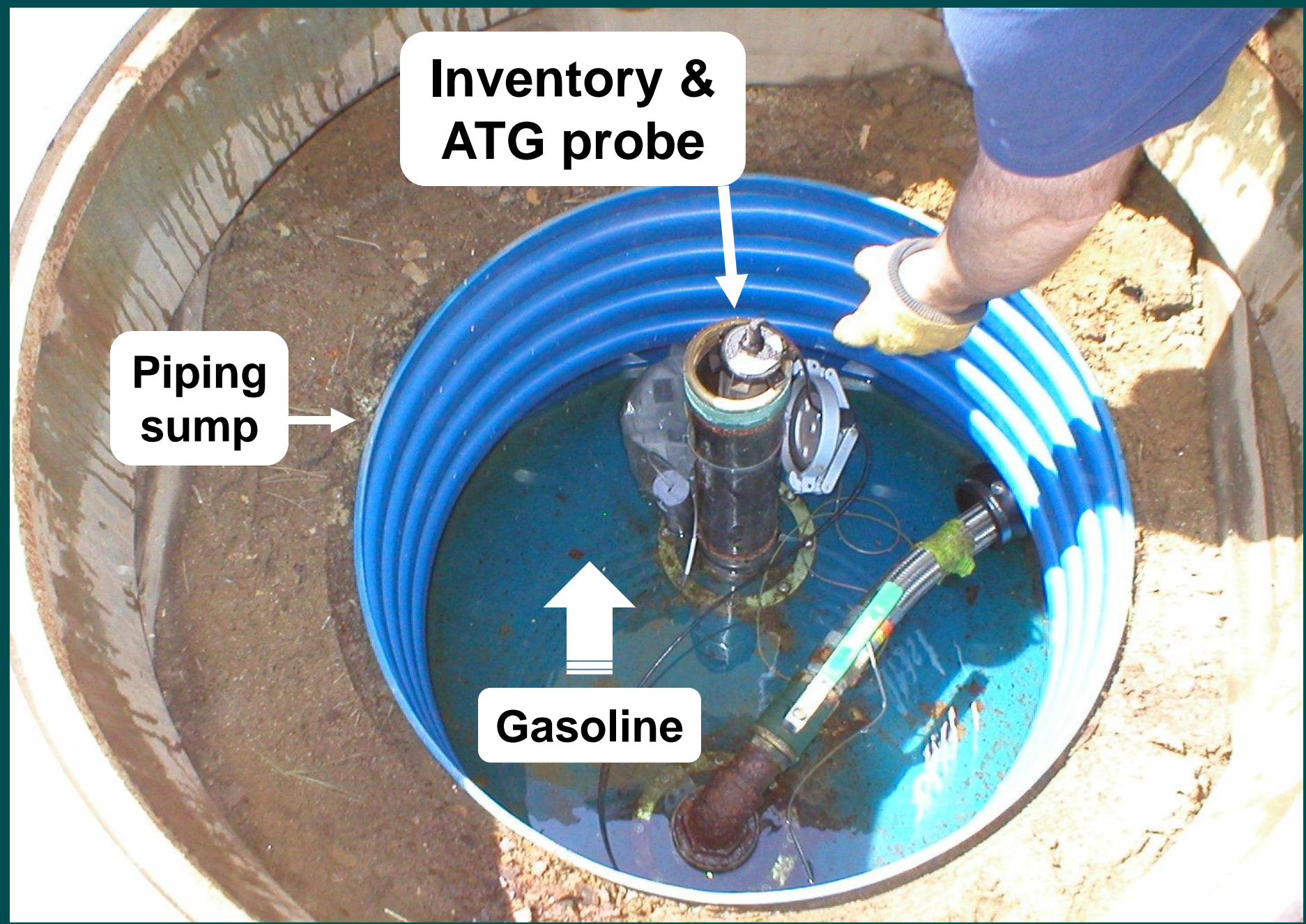
Do Not Leave Unattended



**In the  
Basement**

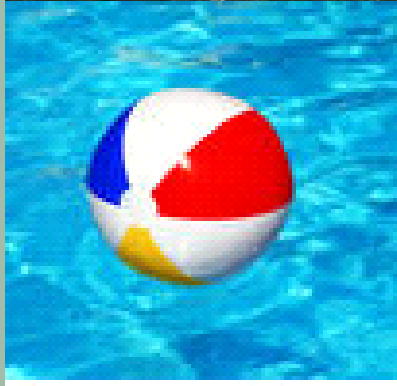








# Ball Float going going gone



26th National Tanks Conference 2018



# Ball Float OPW

## Standard Ball Float

1/8" Bleed  
hole

4 Prong cage  
with bleed  
holes



## 30 Minute 30VML

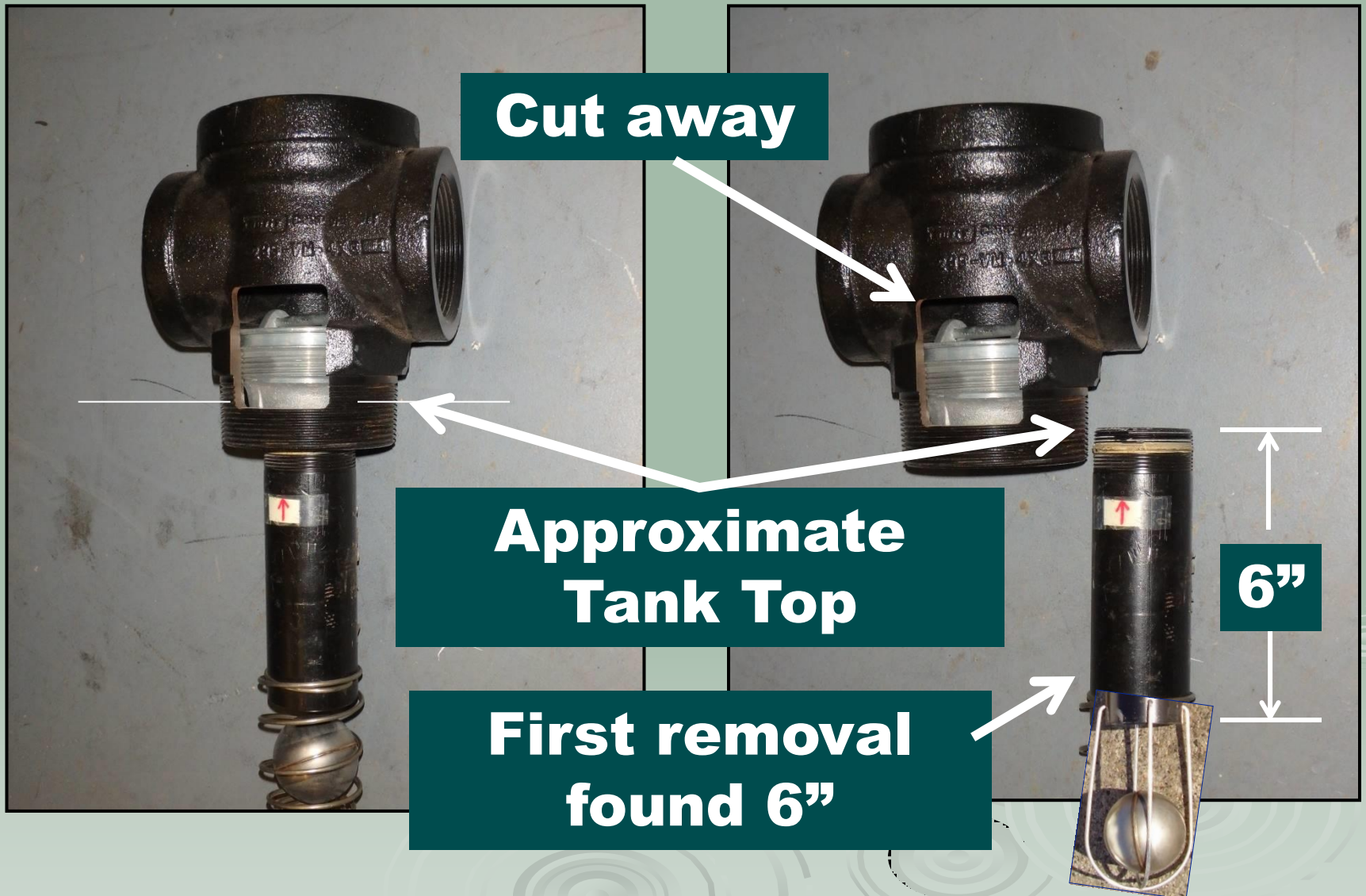
Gasket (missing)

1/16" Bleed  
hole

Spiral cage

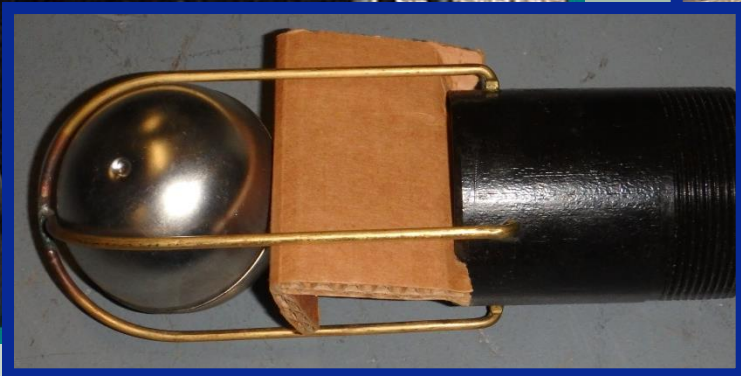
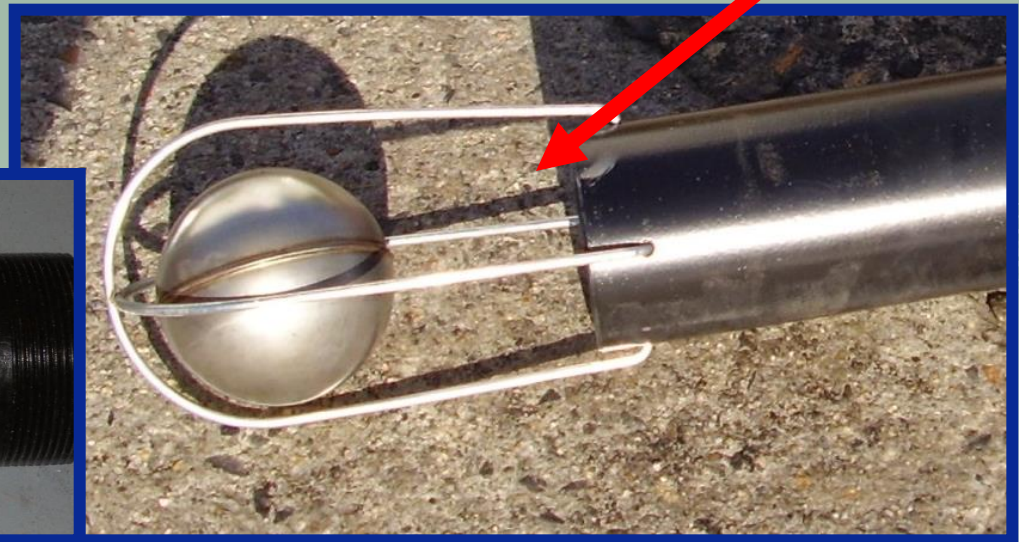


# Tank Top Extractor





# Bad Signs





# Bad Signs



# Diesel Tanks



**Bleed hole  
corroded**

**6 yrs. old  
in  
Fiberglass  
Tank**

**Cage  
corroded**

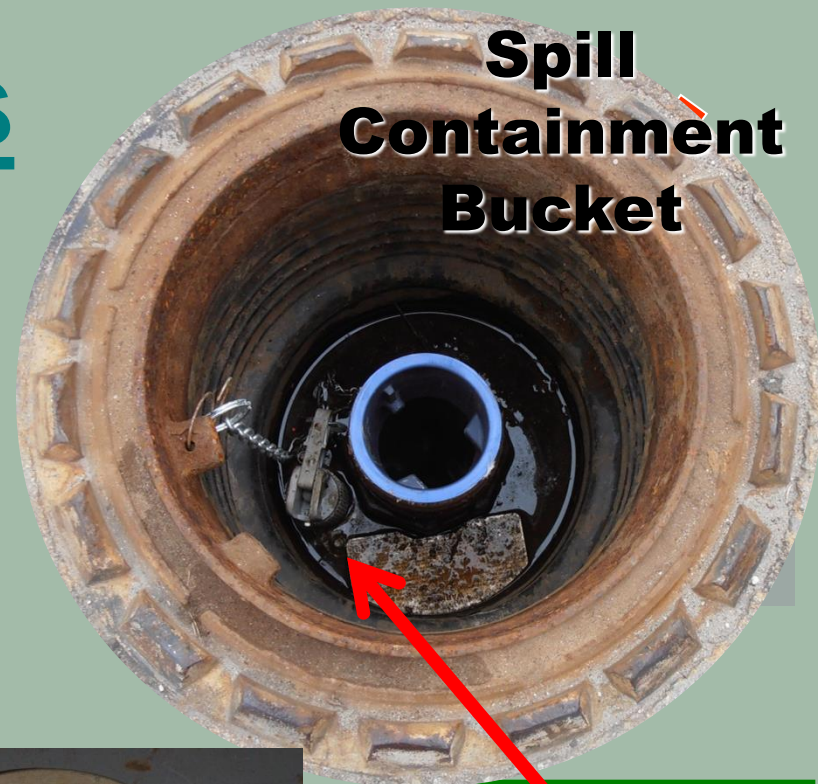




# Problems



**Zip Tie**



**Spill  
Containment  
Bucket**



**Loose ATG Cap**



**Leaking Drain Valve**



**Look for open  
bleed hole**

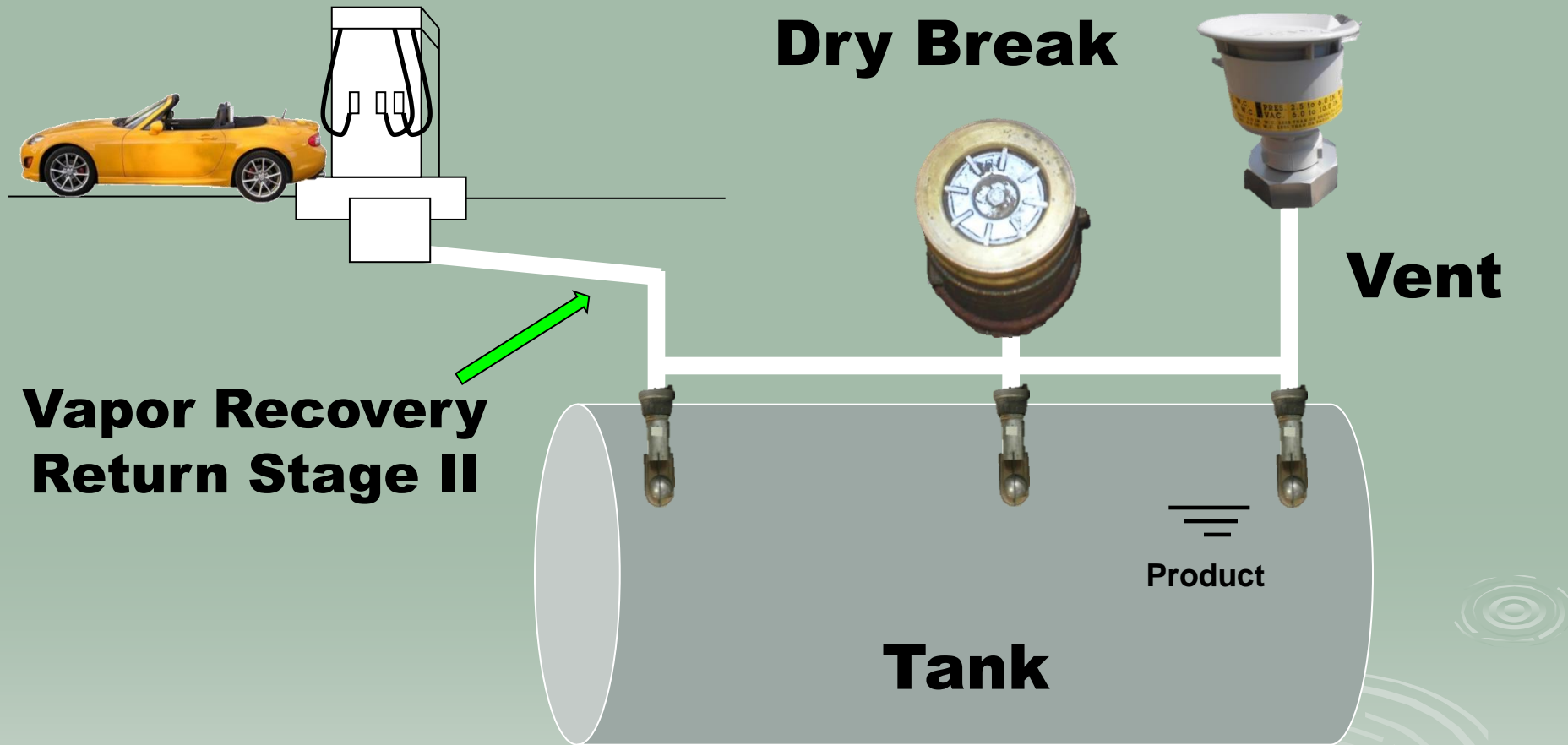
**Bleed Holes**

**Drill new  
Plug the old**





# Inspect all locations



# Device-Delivery Compatibility

## ➤ Ball Float (BF)

- Gravity only - tight connection
- Multiple BF per tank

Can not use with:

- Coaxial drop tube
- Suction pump-dispenser
- (air eliminator)






# Mindful



# Overfill Device

- Rule considerations
- Compatible delivery method
- Register primary device (NH)

New Hampshire Department of Environmental Services  
29 Hazen Drive  
P. O. Box 95  
Concord, New Hampshire 03301 (603) 271-3644  
FAX (603) 271-2181



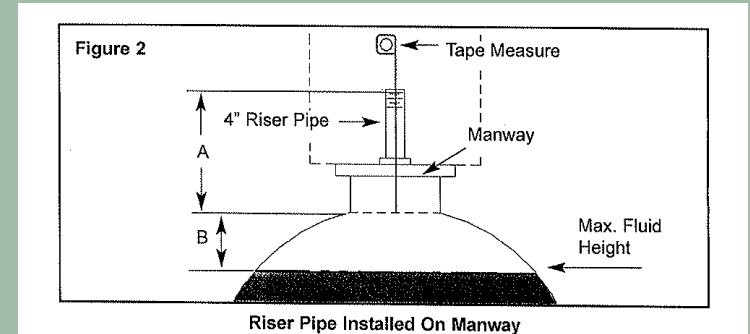
1-may-2005

## Registration for Underground Storage Tank Systems

Type of Registration	State Use Only
<b>Instructions:</b> Please type or print in ink all items except "signature" in Section VII. This form must be completed for each location containing underground storage tanks. If more than four (4) USTs are owned at this location, photocopy the following sheets, and staple additional sheets to this form. Also, provide a site plan and facility layout. (May be an accurate hand sketch).	ID Number: _____ Site Number: _____ Date Received: _____  Active Tanks: <input type="checkbox"/> Closed Tanks: <input type="checkbox"/>
<b>I. Facility Owner (Tank System Owner)</b>  Owner Name: _____  Mailing Address: _____	<b>II. Location of Tank Systems</b>  Facility Name: _____  Street Address (DO NOT USE POST OFFICE BOX): _____

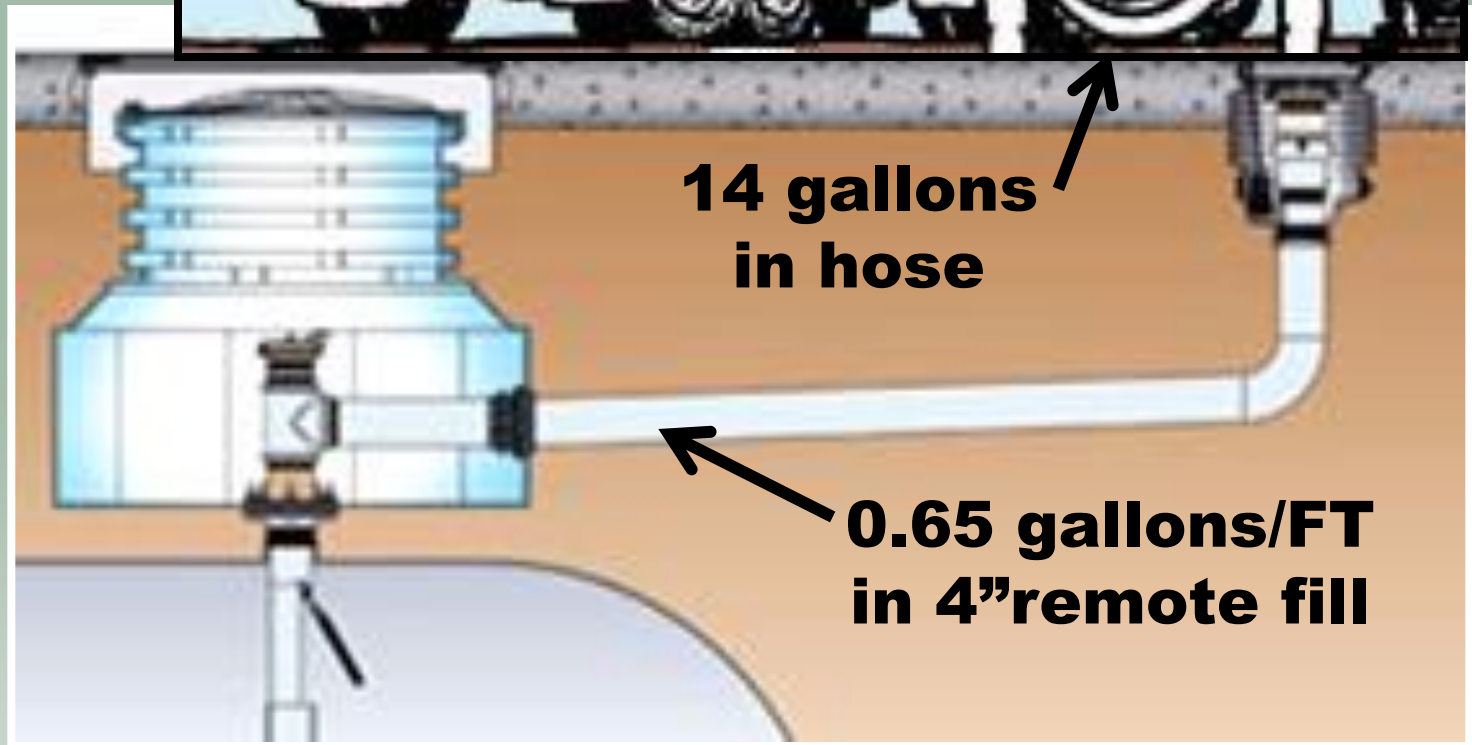


# Tanks with Manway



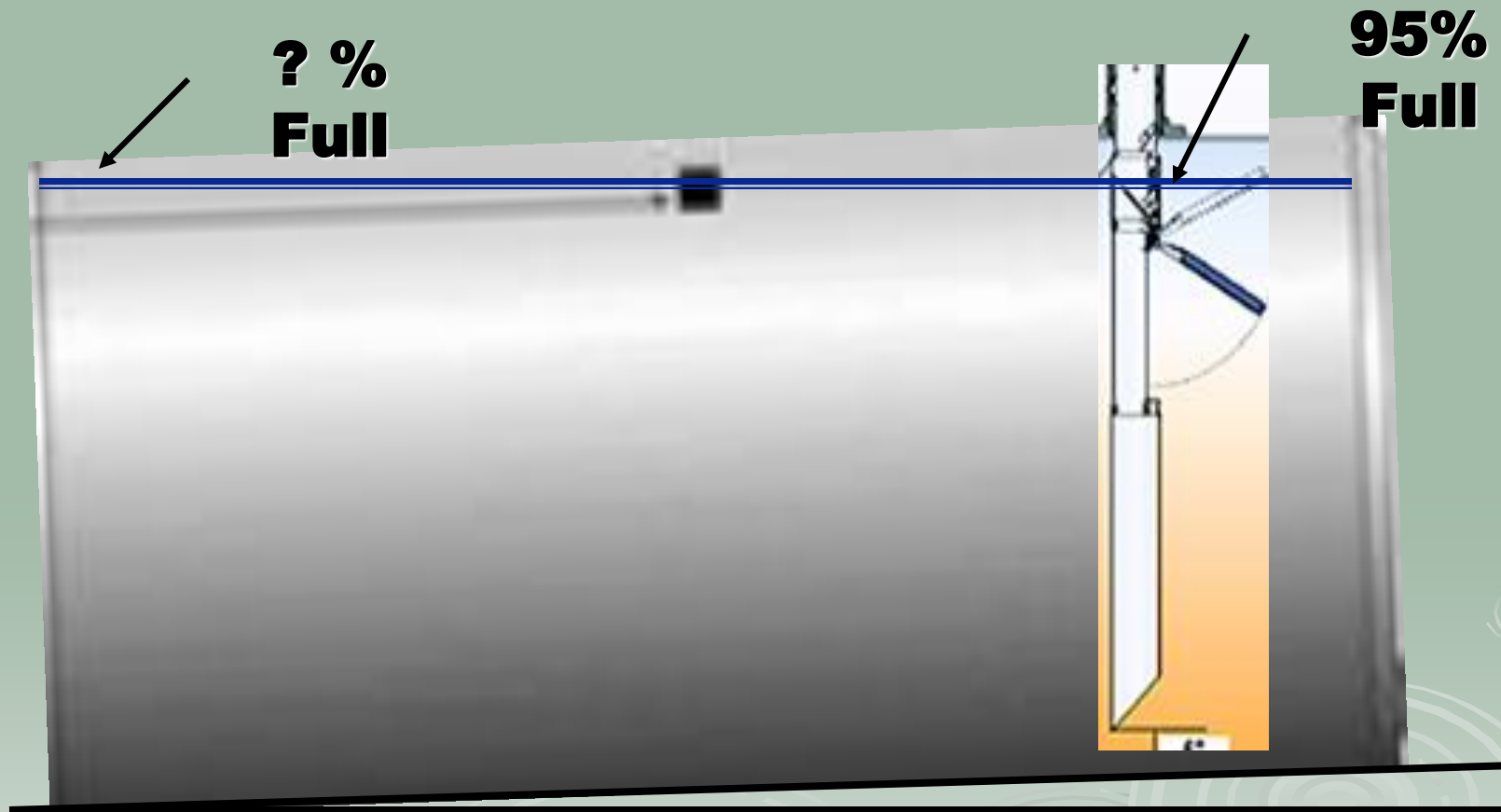
## Fiberglass Tank

Remote fill  
pipings  
liquid  
volume





# FILL TO ??



**Tilt !!!!**

# Double Wall Tank 300 vs 360

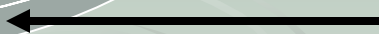
**Single  
wall**



➤ **300 degree  
tank**

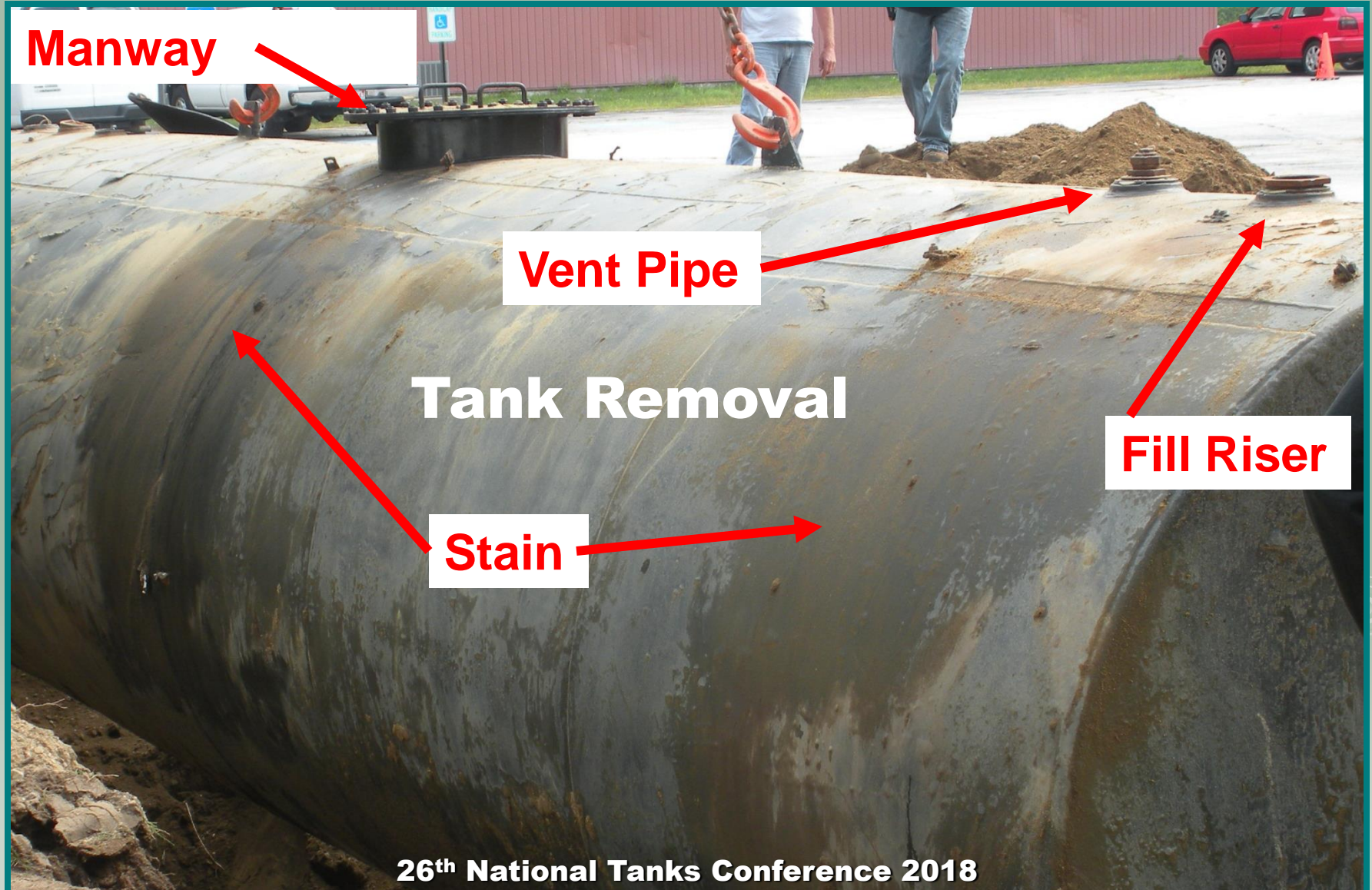
**360  
Degree**

**Double  
wall**

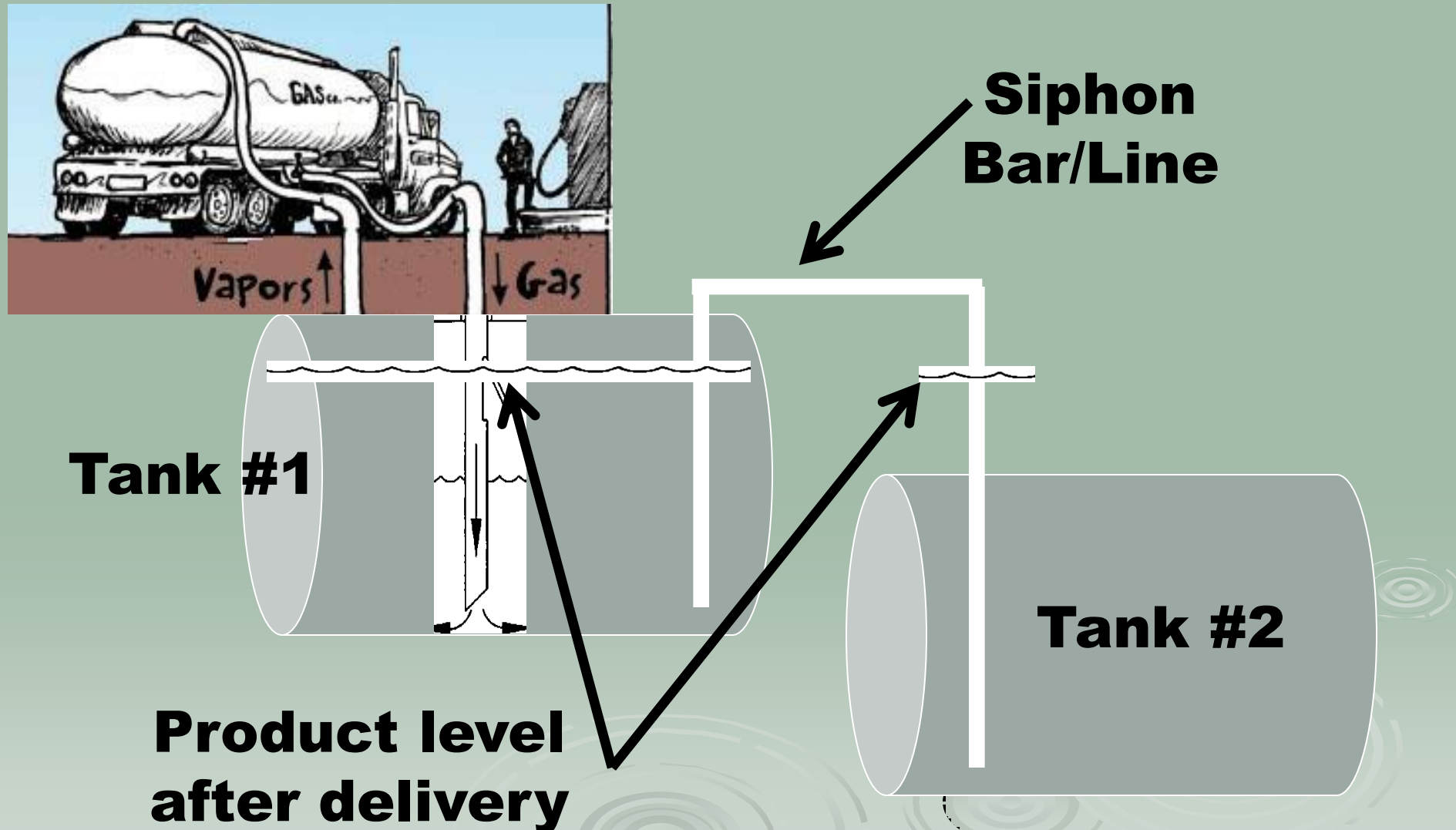




# Prior to wetting the inside top of the tank



# Tanks Installed Different Elevations





# Compromised Overfill



**Loose Adapter**



**Corrosion Hole**

# Restrictive – Moving Forward

- EPA -- End of flow restrictors on vents
  - Flow restrictors on other locations such as the fill.

**Not !!**  
**Flow Stop**  
**device**

UNIVERSAL



Open



Closed

**Float Swings**  
**Sideways**



# OPW

- Verify closure
- Check resistance of float (will it float?)

- Still waiting for a requested -

**Spruce Spring Scale**  
to measure acceptable  
hinge resistance  
(currently just estimate)



Float  
Should  
pop  
out like  
this



# Fuel Compatibility Matrix



ENVIRONMENTAL	Description	Unleaded Fuel	Petroleum Diesel	Up to 15% Ethanol	E85 / E100	Bio-Diesel			Av-Gas	Jet Fuel	Kerosene/ Fuel Oil
						B2	B5	B20			
1-2100 Series	Spill Containers	ULC	ULC	ULC	X	X	X	X	X	X	ULC
1-3100 Series (Edge)	Double Wall Spill Container	ULC	ULC	ULC	X	X	X	X	X	X	ULC
60V Series	Vapor Line Shear Valve	UL/ULC	UL/ULC	UL/ULC	X	X	X	X	X	X	UL/ULC
10 Series	Emergency Shut Off Valve	UL/ULC	UL/ULC	UL/ULC	X	X	X	X	X	X	UL/ULC
10 Plus Series	Emergency Shut Off Valve	UL/ULC	UL/ULC	UL/ULC	X	X	X	X	X	X	UL/ULC
61SALP-1020-EVR	Fill Swivel Adaptor	X	X	X	X	X	X	X	X	X	X
633T-8076	Fill Adaptor	X	X	X	X	X	X	X	X	X	X
61VSA-1020-EVR	Vapor Swivel Adaptor	X	X	X	X	X	X	X	X	X	X
1611AVB-1625	Vapor Adaptor	X	X	X	X	X	X	X	X	X	X
634TT-7085-EVR	Fill Cap	X	X	X	X	X	X	X	X	X	X
1711T-7085-EVR	Vapor Cap	X	X	X	X	X	X	X	X	X	X
634LPC-040	Low Profile Fill Cap	X	X	X	X	X	X	X	X	X	X
1711LPC-0300	Low Profile Vapor Cap	X	X	X	X	X	X	X	X	X	X
62MBP Series	Monitoring Probe Cap	UL	UL	X	X	X	X	X	X	X	UL
61SO Series	Overfill Valve	ULC	ULC	ULC					X	X	ULC
61SOM Series	Overfill Valve Anodized	ULC	ULC	ULC	X	X	X			X	X
61T Series	Drop Tubes	X	X	X					X	X	X
71SO Series	Overfill Valve	ULC	ULC	ULC					X	X	ULC
253 Series	Extractor Valve	X	X	X	X	X	X	X	X	X	X
FCXX Series	Stainless Flex Connectors	UL/ULC	UL/ULC	UL/ULC	X	X	X	X	X	X	UL/ULC
53VML/30MV Series	Ball Floats	X	X	X	X	X	X	X	X	X	X
523V Series	Pressure Vacuum Vent	UL	UL	UL	X	X	X	X	X	X	UL
623V Series	Pressure Vacuum Vent	UL	UL	UL	X	X	X	X	X	X	UL

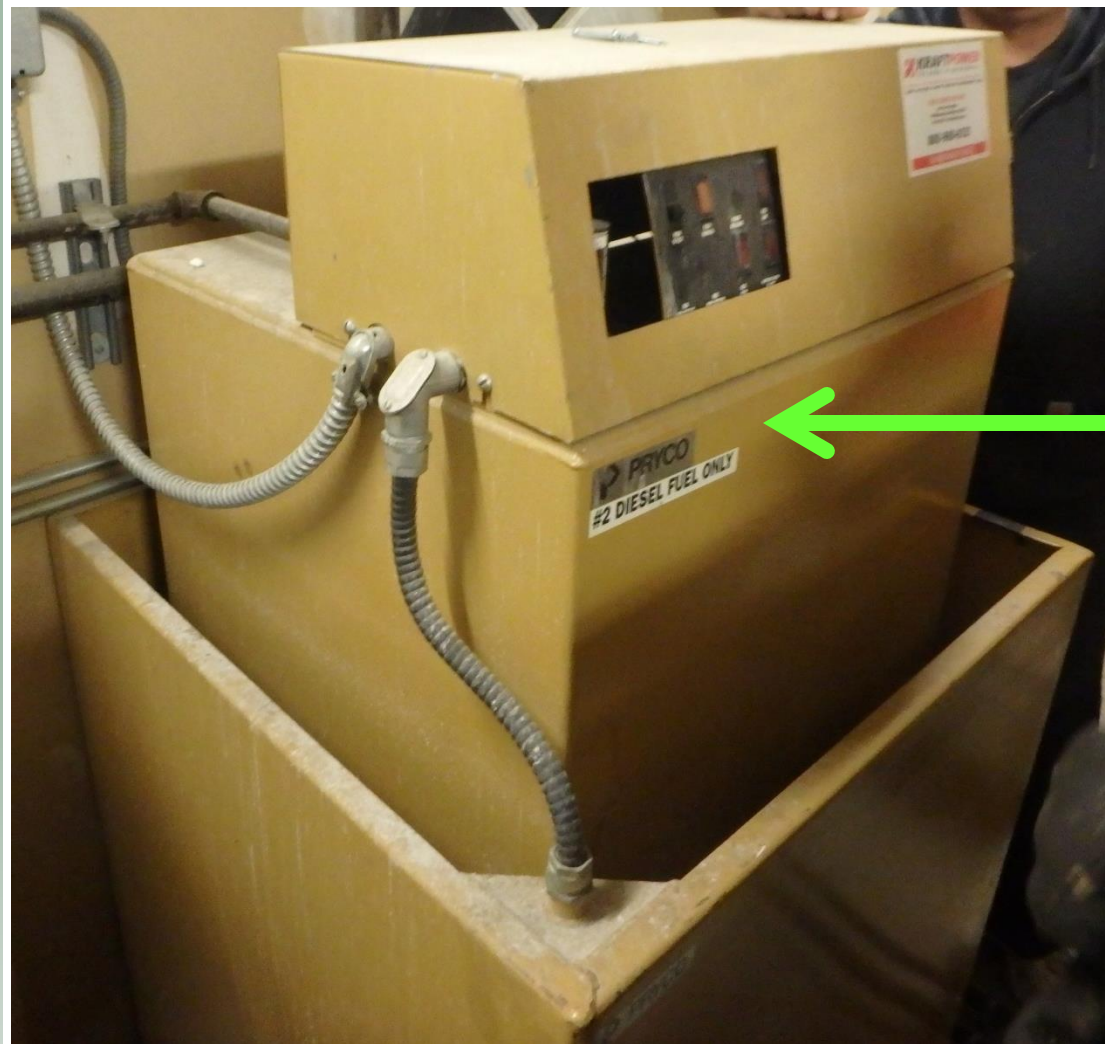
UL - UL listed    X - Compatible    ULC - UL Canada



# Day Tank

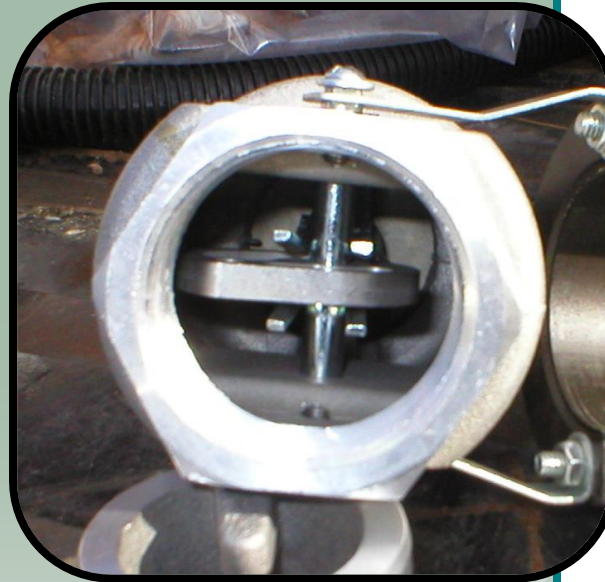
## Overfill Sensor Testing

NFPA code – National Fire Protection Association.



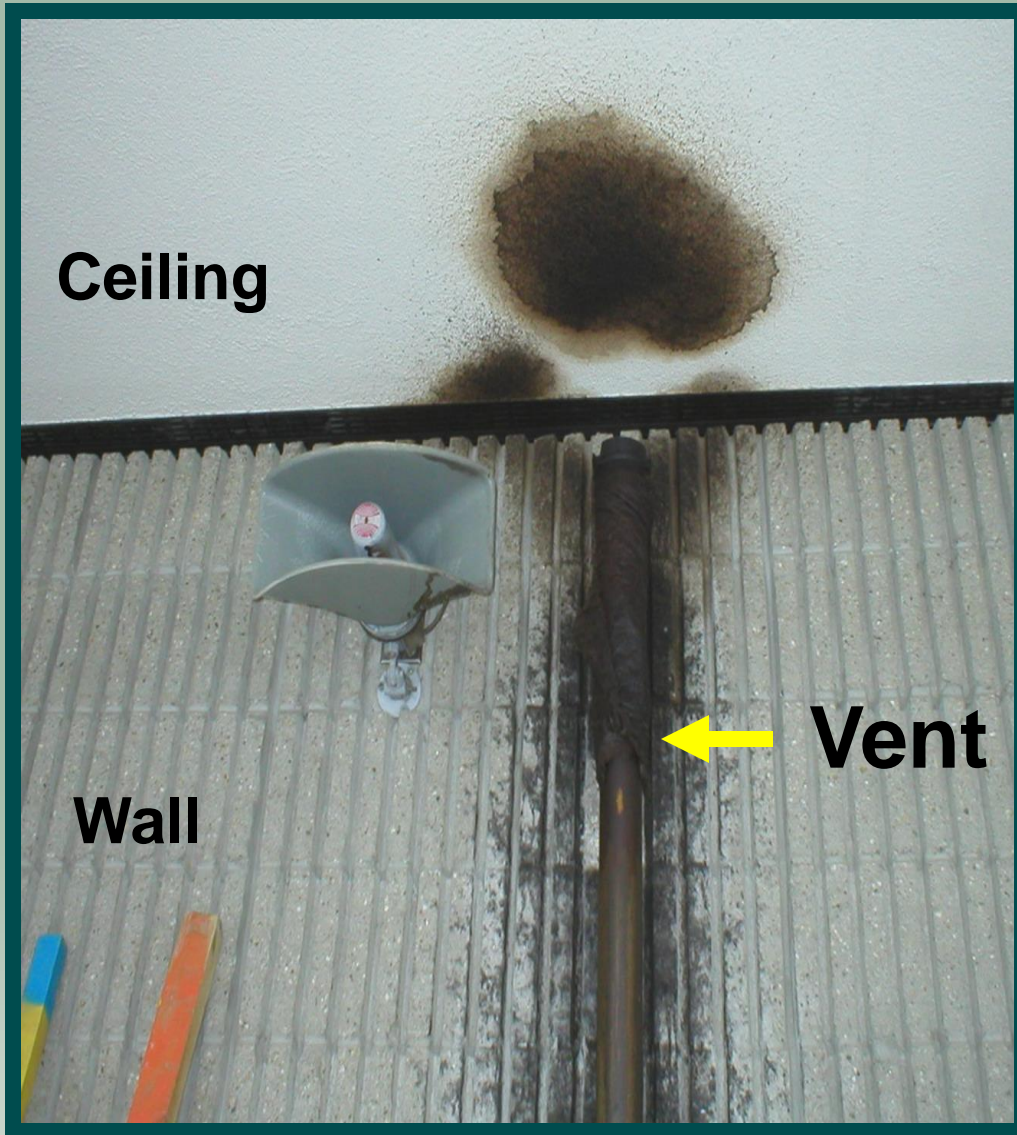
# Above Ground Tank Device

- OPW 61FSTOP
  - NH Approved per waiver request
    - \*\* 90% fill level
  - Pressure delivery
    - heating oil
    - kerosene
    - diesel
  - **Can not stick tank!**





# Overfilling - Vents



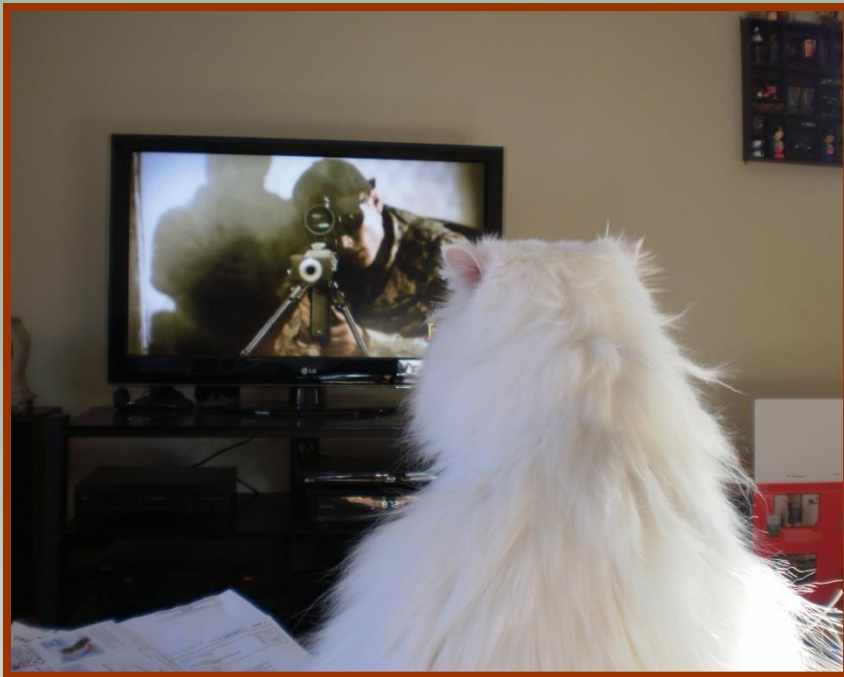
# Summary

- Conditions and issues
- NH 1 in 4 inspections have overfill issues
  - That could not be resolved during inspection
- Not removed and inspected
- (Proper Install & Operation is??) !!!!!!!!



# Inspectors Think Safety

Do not  
shoot the  
messenger



**We are targets**



# Tools





# Adapter Tools



# Drop Tube Removal



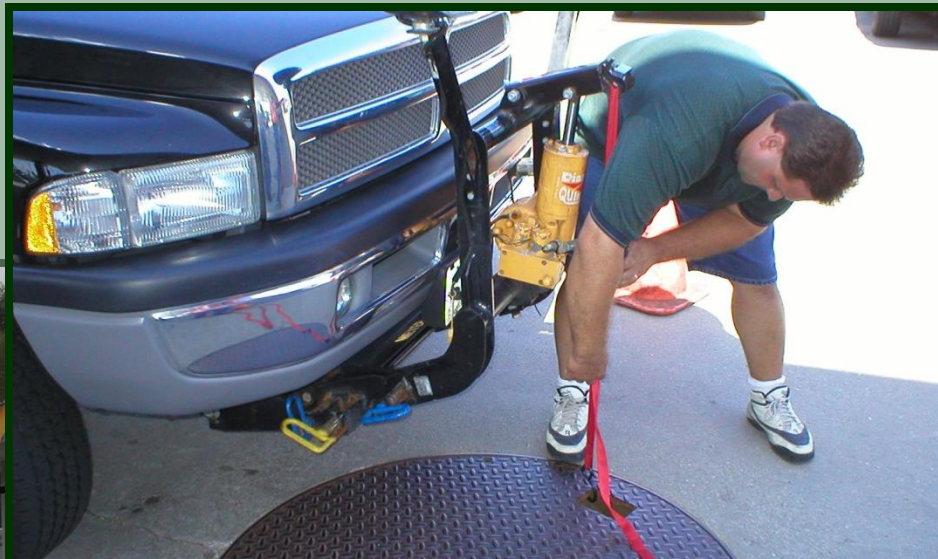


# Ball Float Access





# Access



Vault



# Compatible Devices

<u>Overfill Device</u>	<u>Delivery Method</u>		<u>Fill Connection</u>	
	Peddle Truck (Pressure)	Tanker (Gravity Drop)	Tight (Gravity Drop)	Loose
AA 90%	Yes	Yes	Yes	Yes
FV 95%	No	Yes	Yes	No
BF 90%	No	Yes	Yes	No

**Some States allow Vent Whistle on small tanks**

# Compatible Devices

<u>Overfill Device</u>	<u>Tank System Pump Type</u>		<u>Vapor Recovery</u>	
	(Pressure)	Suction with (dispenser)	Two Point	Coaxial
<b>AA 90%</b>	Yes	Yes	Yes	Yes
<b>FV 95%</b>	Yes	Yes	Yes	Yes
<b>BF 90%</b>	Yes	No	Yes	No



# Rule Writing

- Register primary overflow
- Plan review -- product change
- Alarm signage
- Lumens & alarm times
- Day tanks
- Testing (upon-removal)
- Pressure delivery remove ball float/flapper

# Questions





# Contact Information

**Spruce C. Wheelock**

**NH Department of  
Environmental Services**

29 Hazen Drive, PO Box 95

Concord, NH 03302-0095

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